THE EFFECTS OF INTERFERON β-1b ON DEPRESSION, ANXIETY, AND QUALITY OF LIFE IN MULTIPLE SCLEROSIS

İNTERFERON β-1b'NİN MULTİPL SKLEROZDA DEPRESYON, ANKSİYETE VE YAŞAM KALİTESİ ÜZERİNE ETKİLERİ

INTERFERON BETA-1B AND QUALITY OF LIFE

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Öz

Amaç: Multipl Skleroz'un merkezi sinir sistemine doğrudan etkileri, hastalığının kendi stresi, yeti yitimleri ve ilaçların yan etkileri hastanın psikolojisi ve yaşam kalitesi(YK) üzerine olumsuz etki yapabilmektedir. Bu çalışmanın amaçları: Yeni atakla gelen ve IFNβ-1b başlanan atak ve iyileşme ile giden MS hastalarında tedavinin başlangıcında, 1 ve 6 ay sonrasında psikiyatrik ve yaşam kalitesi ölçümleri yapmak ve IFNβ-1b'nin psikiyatrik ölçümler ve yaşam kalitesi değerleri üzerine olan etkilerini değerlendirmek ve karşılaştırmaktır. Gereç ve Yöntem: Otuz atak ve iyileşme ile giden MS hastası çalışmaya dahil edildi. Tüm hastalar altı ay boyunca IFNβ-1b tedavisi aldı. Depresyon [(Beck Depresyon Ölçeği (BDÖ)], anksiyete [Durumluk Kaygı Ölçeği (DKÖ)] ve YK [Kısa Form-36 (KF-36)] ölçümleri prospektif olarak 30 MS hastasında elde edildi. Bulgular: KF-36'nın fiziksel rol güçlüğü ve ağrı alt ölçeklerinde ilk ve son ölçümlerde çalışma grubundaki tüm hastalarda istatistiksel olarak anlamlı farklılık saptandı (p<.05, p<.05). Bu değişkenlerde iyileşmeler saptandı. İlk ve son BDÖ ölçümleri arasında istatistiksel anlamlı farklılık saptanmadı (p>.05). Ancak son DKÖ ölçümleri bazal DKÖ ölçümlerine göre yüksekti ve fark istatistiksel olarak anlamlı idi (p<.007). Tartışma: Yeni ataklı atak ve iyileşme ile giden MS hastalarında başlanan interferon bileşiklerinin yaşam kalitesini iyileştirdiği saptandı. Tedavi süresince depresyon ölçümleri üzerine farklılık saptanmazken, IFNβ-1b'nin anksiyete ölçümleri üzerine olumsuz etkisi saptandı.

Anahtar Kelimeler

Depresyon; Anksiyete; Yaşam Kalitesi; Interferon Beta-1B; Multipl Skleroz

Abstract

Aims: Direct effects of Multiple Sclerosis (MS) on the central nervous system, the stress of the disease itself, loss of functions, and side effects of the medications may have negative effects on patients' psychology and quality of life (QOL). The aims of this study are to do psychiatric and quality of life measurements on relapsing remitting MS patients following a new attack, at baseline and following the first and sixth months of treatment with IFNβ-1b and to evaluate the effects of IFNβ-1b on psychiatric and quality of life parameters of these patients. Material and Method: Thirty patients with relapsing remitting MS were recruited for this study. All patients received IFNβ-1b treatment for six months. Depression [(Beck Depression Inventory (BDI)], anxiety [State Anxiety Inventory (SAI)] and QOL (SF-36) measurements were prospectively obtained in these patients. Results: The first and final results on the subscales of SF-36 such as physical role difficulty and pain scale showed a statistically significant difference for all patients in the study (p<.05, p<.05). We observed improvements on these variables. The baseline and sixth-month BDI did not show statistical significance (p>.05). However, the sixth-month SAI score was higher than the baseline SAI score and the difference is statistically significant (p<.007). Discussion: We found that the interferon compounds administered when patients with relapsing remitting MS had a new attack improved the quality of life. There was no difference in depression scores while using interferon, while IFNβ-1b had a negative impact on the anxiety score.

Keywords

Depression; Anxiety; Quality Of Life; Interferon Beta-1B; Multiple Sclerosis

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Introduction

Multiple Sclerosis (MS) has been documented in the literature for more than 150 years. It is a demyelinating disease that affects the brain and the spinal cord. The disease is most commonly seen in patients between 20 and 50 years old. MS has a variable course. The most commonly seen is the relapsing remitting type. In this type, patients have remissions and almost a complete cure. On the other hand, the subsidiary progressing and chronic progressing types of MS have a poor prognosis [1]. In the literature there are many publications about the psychiatric disorders that may exist in MS. Common psychiatric conditions can range from mania and depression to psychosis [2-4]. Patients' quality of life and psychology can be adversely affected due to the disease's direct effect on the central nervous system, the stress of the disease itself, and reaction to functional loss. There are few studies looking at the quality of life in MS patients [5-7]. Most of these studies are performed across all types of MS; there is only one study that focuses solely on the relapsing remitting type [8].

Interferon compounds have dramatically changed the treatment approach to MS. It is known that these drugs decrease the number of attacks and prevent functional loss [1, 8, 9]. However, there are also some studies that show that the drugs from this group can have negative effects on psychological health. In MS, the most commonly discussed issue is the depression that is seen with interferon use. Some of these studies have shown that these drugs worsen depression [9, 10], while others have shown they do not worsen depression [11]. There are a few studies that demonstrate the relationship of interferon to other psychiatric manifestations [12,13]. The aim of the present study was to compare the baseline, first-month, and six-month levels of , depression, anxiety, and quality of life (QOL) levels of patients with relapsing remitting MS who suffer a new attack and are started on IFNβ-1b.

Material and Method

Thirty patients (20 women, 10 men) between the ages of 18 to 49 with relapsing remitting MS (diagnosed according to the criteria by Poser et al. [14]) and presenting with a new attack to Başkent University Adana Neurology Clinic were enrolled in this study. All patients were given IFNβ-1b as initial treatment. Patients were given subcutaneous 8 million units IFNβ-1b every other day. We used Beck Depression Inventory (BDI), State Anxiety Inventory (SAI), and SF-36 to evaluate the quality of life and psychiatric parameters of patients at baseline and at first and sixth months of treatment.

All patients were evaluated by an experienced psychiatrist during the study. Patients having a current psychiatric diagnosis and treatment were excluded from the study. The local ethics committee approved the present study. Written informed consent was obtained from patients who participated in this study.

Scales:

Beck Depression Inventory (BDI): To evaluate an individual's depression, the inventory contains 21 expressions that the individual fills in by himself/herself. This inventory measures the severity of the depression and it is sensitive to the changes such as psychotherapy and drug treatment [15]. Hisli (1988) has assessed the validity and reliability of the BDI measure for Turkey [16].

State Anxiety Inventory (SAI): Anxiety is described as the subjective tension and worry that results in the excitation of the autonomic nervous system in an increasing fashion. This inventory contains 20 questions [17]. Turkish adaptation of this inventory has been made [18].

Short Form (SF-36): This is the most commonly used generic scale that measures the quality of life. It is especially designed to measure the quality of life of patients with physical disease. However, it can still be used successfully on healthy subjects because it measures the positive as well as the negative sides of health status. It is also very sensitive to small changes. SF-36 examines eight states of health in 36 items. These eight states are physical functioning, role limitations (physical and emotional), social functioning, mental health, vitality, pain, and general perception of health. This scale does not have an overall score. Total score of the 8 subscales are measured. The reliability of the inventory is .73-.76. For validity, Nottingham Health profile has been used together with SF-36 and the correlations between the similar subscales is more than for the non-similar subscales [19,20].

Statistical analysis

The general linear model (GLM) analysis of variance repeated measures module was used to evaluate within-subjects changes over time for each SF-36 subscale score, BDI, and SAI. In the study, paired sample t test was used for the variables that show a normal distribution and Wilcoxon test was used for the variables not showing a normal distribution.

Results

All the patients in the study group completed the study. There were 20 women and 10 men, totaling 30 patients with relapsing remitting MS in the study. The average age of the study group was 36.8±9.16 (min:18-max:49). Approximately 52% of the patients showed mild and moderate flu-like symptoms due to IFNβ and 26% had mild side effects like injection area reactions. None of these side effects required drug cessation. None of the SF-36 subscales have been found statistically different when the baseline is compared with the first month. The first-month and sixth-month results on the subscales of SF-36, such as physical role difficulty and pain, showed statistically significant difference for all the patients in the study group (t:-3.24, p<.05; p<.05). The subscales showed improvement. There were no statistical differences in the first-month and sixth-month results of the other subscales of SF-36, such as physical functioning, general health, social functioning, emotional role difficulty, and mental health (Table 1, Figure 1).

The BDI and SAI scores were not found statistically different when the baseline was compared with the first month. The baseline BDI mean value was 16.5±7.80 and the first-month mean value was 16.3±6.99. There was no statistical difference between these two (t=.63, p>.05). However, SAI value was higher in the sixth-month result than the first-month result (first-month mean 53.6±7.53, sixth-month mean 55.2±7.07) and this difference is statistically significant (t=-2.80, p<.007) (Table 1, Figure 2).

Table 1. Demographic data and principle characteristic of study sample (n: 30)

Variable	
Age (means± SD, years)	36.8±9.16
Female gender (%)	78.9
Education (means± SD, years)	9.4± 3.28
Married status (%)	68.4
Employment (%)	48.5
Health insurance (%)	100
Duration of disease (means± SD, years)	2.1±1.45
MMSE (means± SD)	29.5± 0.8

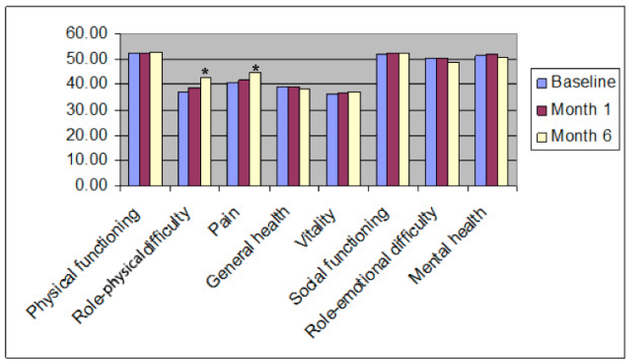

Figure 1. Mean changes of SF-36 subscale scores of 30 MS patients at baseline, first month and sixth months of IFN-β-1b treatment
* sixth month versus baseline significantly higher in the whole population

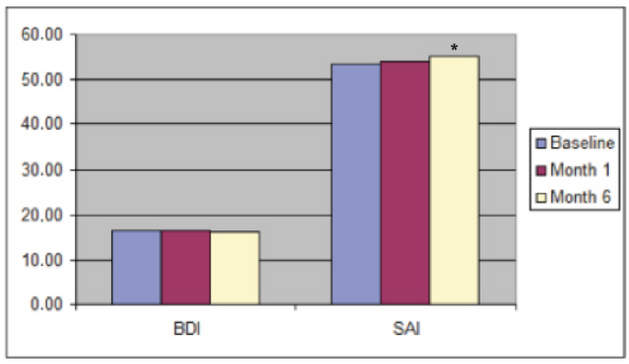

Figure 2. Mean changes of BDI and SAI scores of 30 MS patients at baseline, first month and sixth months of IFN-β-1b treatment
* sixth month versus baseline significantly higher in the whole population

Table 2. Mean and standard deviations of SF-36 subscale, BDI and SAI scores of 30 MS patients.

Variable	Baseline	Month 1	Month 6
Physical functioning	52.3±24.74	52.5±43.66	52.8±22.24
Physical role difficulty	37.3±29.92	38.4±14.05	42.5±27.12
Pain	40.7±19.65	41.6±23.37	45.3±15.84
General health	38.9±13.91	39.1±24.67	38.2±13.60
Energy (Vitality)	36.3±19.93	36.3±21.21	36.9±18.24
Social functioning	52.0±26.20	52.2±33.03	52.6±25.46
Emotional role difficulty	50.3±35.70	50.5±30.41	48.5±35.54
Mental Health	51.7±17.66	51.8±18.56	51.0±13.03
BDI	16.5±7.80	16.5±4.61	16.3±6.99
TAI	53.6±7.53	54.0±5.55	55.2±7.07

Discussion

In our study we found that interferon compounds that are started on patients with relapsing remitting MS diagnosis who suffer a new attack, have increased the quality of life of these patients during the first six months of interferon treatment. In this study, we found improvements in the physical role difficulty and pain subscales of SF-36. Arnoldus et al. did a 1-year follow-up study on patients with MS taking IFNβ and found a linear improvement in physical role difficulty [7]. This result is compatible with our study. However in the same study, although there was some mild improvement in pain, this difference on parameters was not statistically significant. In our study we found statistical difference on pain subscales of SF-36. Previous studies showed that because IFNβ decreases the number of new attacks, it increases the quality of life [8, 10, 21]. Extension of the PRISMS study results showed that these treatment effects continue for many years and early treatment of patients is advantageous for quality of life [8]. However, there are studies in the literature that found that the IFNβ has a negative effect on quality of life [22]. On the other hand, in a recent systematic review comparing interferons-beta versus glatiramer acetate for relapsing remitting multiple sclerosis, evidence was still found to be insufficient for a comparison of the effects of the two treatments on quality of life measures [23].

The study group did not show any difference on depression values while taking IFNβ, but there was an increase on anxiety values. An earlier study showed that IFNβ treatment causes depression and fatigue in 40% of patients [24]. However, the frequency of depression is high in untreated MS patients, and we can regard the symptoms such as fatigue, apathy, and depression as the initial symptoms of MS [12]. The IFNβ treatment in fact does not increase the depression. Further, there are many publications saying that it actually decreases the depression, thanks to the treatment of the disease and the prevention of relapses [8, 11, 12]. In our study, in the patients taking IFNβ treatment, the six-month scores of depression were not significantly higher compared with the baseline level. Interestingly, there was negative impact on anxiety scores. Apart from the treatment's direct complications, most of the IFNβ compounds require injection preparations. Most patients may develop fear of the injection and there may be symptoms like anxiety, autonomic reactions, and repulsion. Studies showed that the anxiety of injection was the most powerful determining factor on stopping the treatment [25]. Our study showed that the anxiety scores worsened for patients taking every-other-day subcutaneous IFNβ-1b. Plus, the pathological physical symptoms due to the MS lesions may possibly affect the patients' functioning and increase their anxiety. We must not forget that simple, common tasks of our daily life may be difficult for these patients. All these are obvious factors that trigger anxiety.

In our study, the most important limiting factor is the lack of follow-up information for more than six months. On the other hand, this is one of the rare studies that specifically examines the psychiatric symptoms of patients with relapsing remitting MS being treated with IFNβ-1b.

Conclusion

Interferon compounds started on patients with relapsing remitting MS who are suffering a new attack have improved the quality of life. In our study group, we did not observe any important side effects, and depression scores did not change as a result of interferon use. However, the anxiety scores of our study group did increase significantly. This study demonstrates that the anxiety scores of patients with MS taking IFNB-1b treatment are higher than reported in other similar studies. These results indicate the need for an effective outreach strategy for dealing with psychiatric disorders in the long term among patients with MS.

Competing interests

The authors declare that they have no competing interests.

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